Proposed Plan

Industri-plex Superfund Site Operable Unit 2
(including Wells G&H Operable Unit 3) Woburn, MA

After careful study of the impacts of contamination at the Industri-plex Superfund Site Operable Unit 2 (including Wells G&H Operable Unit 3), EPA is proposing the following cleanup plan to address soil, sediment, groundwater and surface water contamination. Soil and sediment are contaminated with various chemicals, most notably arsenic. Groundwater is contaminated primarily with arsenic and volatile organic compounds (VOCs). EPA's proposed cleanup plan includes:

- Dredging and off-site disposal of contaminated sediments in the southern portion of the Halls Brook Holding Area Pond (approximately 6,200 cubic yards) and the near shore sediments at the Wells G&H Wetland and Cranberry Bog Conservation Area (approximately 2,300 cubic yards). All disturbed areas will be restored.
- The northern portion of Halls Brook Holding Area Pond will be incorporated into the cleanup plan and serve as a sediment retention area to minimize the downstream migration of metals. The northern portion will be separated from the southern portion by various cofferdams. Natural processes and aeration will be used to reduce contaminants. Sediments in the northern portion will be dredged periodically and sent off-site for disposal.
- Capping and stabilizing sediments and preventing groundwater discharge along approximately 1,000 linear feet of the New Boston Street drainway.
- Capping and stabilizing soils adjacent to the NSTAR and MBTA rights-of-way.
- Establishing institutional controls to ensure that no one comes into contact with soils, groundwater, or deeper wetland sediments above cleanup standards.
- Any loss of wetlands will be compensated for elsewhere in the watershed.
- Long-term monitoring of the groundwater, surface water and sediments.

A closer look at the proposed cleanup plan can be found on page 4.

Your Opinion Counts!

EPA is **accepting public comment on this cleanup proposal from July 1, 2005, to August 1, 2005**. If you have comments regarding this proposed cleanup plan, we want to hear from you before making a final decision. During this 30 day public comment period, you may also submit any comments you may have regarding EPA's March 2005 Draft Final MSGRP Remedial Investigation Report and June 2005 Draft MSGRP Feasibility Study Report.

Public Hearing for the Proposed Cleanup Plan

7:00 - 9:00 p.m.
Wednesday, July 27, 2005

Shamrock Elementary School Cafeteria
60 Green Street, Woburn

To provide formal comment, you may offer oral comments during the public hearing or **send written comments** postmarked no later than **August 1, 2005** to:

Joseph F. LeMay
Remedial Project Manager
US EPA – New England
One Congress Street, Suite 1100 (mail code: HBO)
Boston, MA 02114-2023

Comments can be emailed no later than August 1, 2005 to:

lemay.joe@epa.gov

For more information about the proposed plan, public hearing, or should you have specific needs or questions about the public meeting facility and it's accessibility, please contact EPA Community Involvement Coordinator Angela Bonarrigo (toll free):
888 372-7341 x 81034.

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act, (Section 117) the law that established the Superfund program, this document summarizes EPA's cleanup proposal for the Industri-plex Superfund Site Operable Unit 2 (including Wells G&H Operable Unit 3). For detailed information on the options evaluated for use at the site, see the Feasibility Study available for review on-line at www.epa.gov/ne/superfund/sites/industriplex or at the information repositories at the Woburn Public Library, 45 Pleasant Street in Woburn; the Winchester Public Library, 80 Washington Street in Winchester; and at EPA's Record Center at One Congress Street, Boston.

Industri-plex and Wells G&H Site Histories

Industri-plex

The following is a brief summary of the history of the site.

1853-1969: Chemical and glue manufacturing operations leave waste onsite.

1970s: Development activities disturb some of the historic manufacturing waste.

1983: Industri-plex is placed on EPA's National Priority List.

1986: EPA completes a Record of Decision (ROD) for Industri-plex Operable Unit 1 (IP OU-1) that calls for the following: placement of permeable caps over approximately 105 acres contaminated with arsenic, chromium and lead; placement of an impermeable cap over approximately 5 acres with a gas collection and treatment system; an interim groundwater remedy to reduce benzene and toluene hot spot concentrations in groundwater; further investigation of site-related groundwater and surface water contamination and downstream migration; and, Institutional Controls to preserve the remedy and restrict future land use.

1989: EPA enters into a settlement with the potentially responsible parties (PRPs) for IP OU-1

1998: The PRPs complete construction of OU-1 caps.

The 1986 ROD also required additional investigations of other potential sources of contamination to the aquifer, after which EPA would evaluate the need for a second ROD to address contaminated groundwater and any downstream migration of contamination from the site. This final remedy is known as the Multiple Source Groundwater Response Plan (MSGRP) Remedial Investigation/ Feasibility Study (RI/FS), or simply Industri-plex Operable Unit 2 (IP OU-2).

Wells G&H

The following is a brief summary of the history of the site.

1979: The City of Woburn shuts down municipal water supply wells G and H after testing reveals the presence of chlorinated solvents.

1983: Wells G&H is placed on EPA's National Priority List.

1989 & 1991: EPA completes a Record of Decision (ROD) and Explanation of Significant Differences (ESD), and selects a cleanup remedy for the five source areas contributing contamination to the aquifer. The remedy includes: excavation and off-site incineration of contaminated soils; treating additional contaminated soils in-place by soil vapor extraction; and pumping and treating groundwater contaminated with volatile organic compounds at each source area. This remedy is known as Wells G&H Operable Unit 1 (G&H OU-1).

1991: EPA enters into a settlement with potentially responsible parties (PRPs) at four of the five source area properties.

2003-2004: EPA reaches a settlement with the parties responsible for the fifth source area. Remedies at all five source areas are on-going.

The 1991 Consent Decree and ESD created two additional Operable Units; Operable Unit 2 (G&H OU-2) to investigate and establish a groundwater remedy for the remaining areas of groundwater contamination called the Central Area Aquifer, and Operable Unit 3 (G&H OU-3) to investigate the Aberjona River.

Shared History

2002: Downstream surface water and sediment investigations for the Wells G&H Superfund Site reveal similar metals contamination as those associated with the upstream Industri-plex Site; EPA merges both studies (Industri-plex Operable Unit 2 (IP OU-2) MSGRP Remedial Investigation with Wells G&H OU-3 Aberjona River Study) to establish one comprehensive investigation of the river.

2003: EPA releases the Draft Baseline Risk Assessment (BRA) for Wells G&H OU-3 Aberjona River Study area.

2004: EPA responds to public comments on the Draft BRA before finalizing it in September 2004. EPA completes MSGRP field investigations. Industri-plex PRPs complete site-related investigations.

2005: EPA issues the MSGRP Remedial Investigation Report, which describes the nature and extent of contamination within the Industri-plex study area as well as the Aberjona River Study Area from the Industri-plex site down to the Mystic Lakes and the related risks to human health and the environment. EPA reviews the Feasibility Study and prepares this proposed plan for public comment.

Why is Cleanup Needed?

The 1986 Record of Decision (ROD) for the Industri-plex Site was primarily a source control and groundwater hot spot remedy, identified as Operable Unit 1 (IP OU-1). The 1986 ROD required further investigations to evaluate other potential sources of contamination to the aquifer and to evaluate the downstream migration of site-related contamination via the Aberjona River which flows through the Industri-plex Superfund Site and the Wells G&H Superfund Site (approximately 1 mile downstream of Industri-plex) before continuing south through Woburn and Winchester and discharging into the Mystic Lakes. These further investigations and the final remedy are identified as Operable Unit 2 (IP OU-2). Due to similar surface water and sediment contamination found further downstream, EPA merged the Wells G&H Operable Unit 3 (G&H OU-3) Aberjona River Study with IP OU-2 Multiple Source Groundwater Response Plan (MSGRP) Remedial Investigation to establish one comprehensive investigation of the river.

In March 2005, EPA prepared the MSGRP Remedial Investigation Report. The results of the investigation were as follows:

Groundwater at the Industri-plex site is primarily contaminated with arsenic and benzene which flows south and discharges into HBHA Pond and the HBHA Wetlands. This groundwater contamination impacts surface water and sediments in HBHA Pond. Downstream of HBHA Pond, arsenic contamination continues to impact surface water and sediments in the HBHA Wetlands and Aberjona River.

Surface water concentrations of arsenic were greatest in the Northern Study Area (i.e. between the Industri-Plex Site and I-95), with the highest concentration found in the deep surface water of HBHA Pond. This deep water was the only location where arsenic exceeded the National Ambient Water Quality Standards (NAWQS).

Downstream of I-95, arsenic concentrations in Aberjona River surface water continue to decrease prior to discharge into the Mystic Lakes. The highest concentrations of arsenic in sediments are found in portions of the HBHA and Wells G&H Wetlands, and the Cranberry Bog Conservation Area. Also, the former Mishawum Lake bed received contamination from the site prior to significant filling and development in the 1970s. As a result, portions of the former Mishawum Lake Bed soils are contaminated with high concentrations of arsenic.

A summary of risks posed by the contamination follows:

Soils:

- Arsenic in surface and subsurface soils in the former Mishawum Lake Bed area are associated with potential future health risks to children attending a day care facility, or workers, potentially coming in contact with the soils.

Groundwater Plumes:

- Arsenic and benzene (as well as trichloroethene, naphthalene, and 1,2- dichloroethane) plumes are associated with potential future health risk to workers using the water for industrial/commercial operations.
- The arsenic and benzene plumes also contribute to significant ecological risks in HBHA Pond, and the arsenic plume contributes to downstream migration.

Sediment:

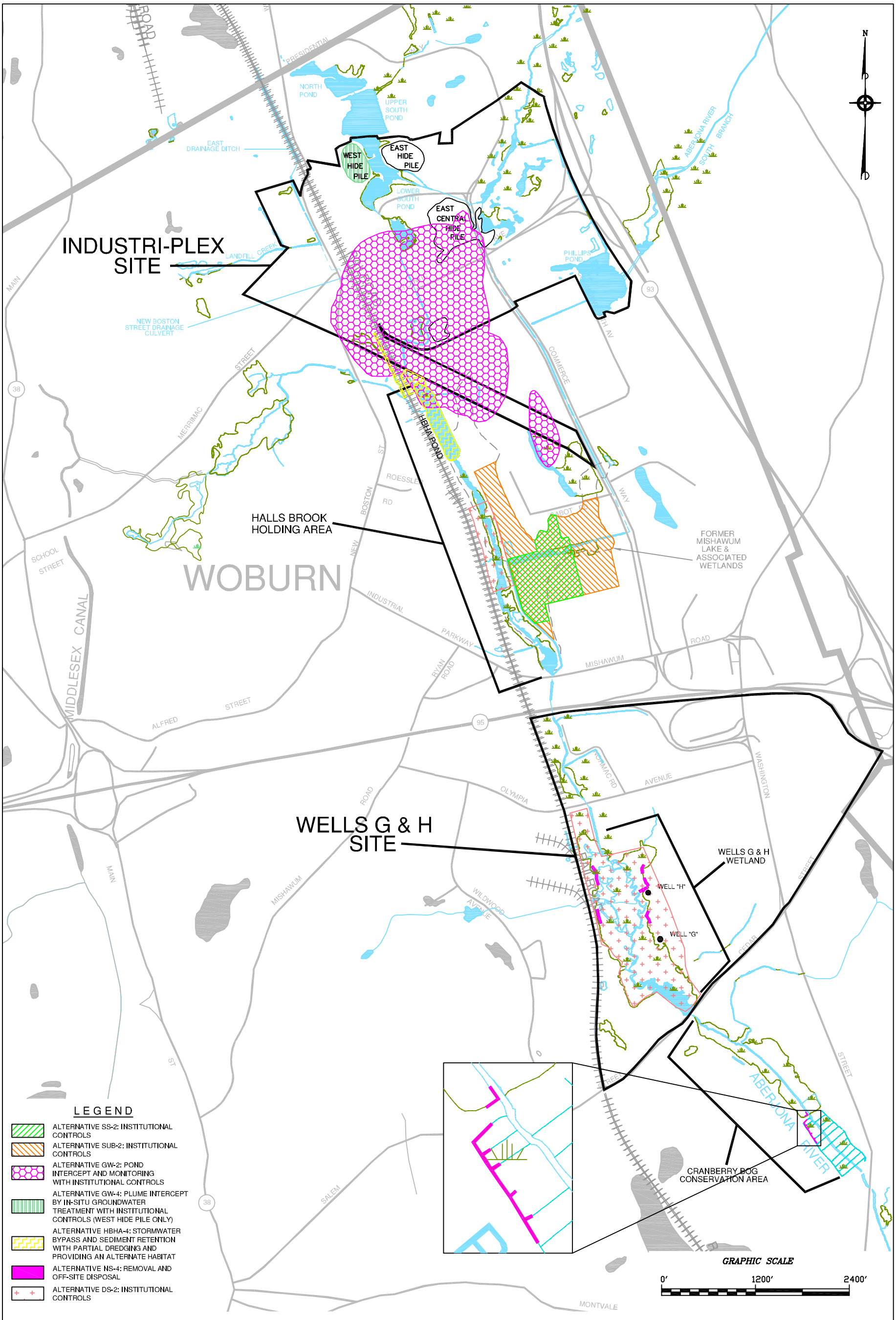
- Arsenic contributes significant ecological risks to the benthic community in HBHA Pond sediments.
- Arsenic in near shore sediments in three areas within the Wells G&H Wetland and Cranberry Bog Conservation Area are associated with potential current and/or future health risks to recreational users.
- Arsenic in deeper sediments in both the HBHA Wetlands and Wells G&H Wetlands are associated with potential future health risk to workers if dredging of these deeper sediments occurs.

Surface Water:

- Benzene and dissolved arsenic in the deep water of HBHA Pond exceed the NAWQS, present a risk to aquatic organisms and contribute to the impairment of benthic invertebrates in the pond. These risks to aquatic organisms are associated with the groundwater plumes discharging into HBHA Pond.

The proposed plan for Industri-plex Operable Unit 2 (including Wells G&H Operable Unit 3) addresses the following areas that are depicted on Figure 1-1:

Surface Soils (SS)
Subsurface Soils (SUB)
Groundwater Plumes (GW)
HBHA Pond and associated sediment stabilization (HBHA)
Near Shore Sediments (NS)
Deep Wetland Sediments (DS)
Surface Water (SW)



SUMMARY OF PROPOSED REMEDIAL ALTERNATIVES

INDUSTRI-PLEX OU-2 PROPOSED PLAN

WOBURN, MASSACHUSETTS

FIGURE 1-1

DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	G. BULLARD	DATE:	JUNE 15, 2005
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A Closer Look At EPA's Proposal. . .

SOILS: EPA's preferred alternative combines *Alternative SS-2 (Institutional Controls with Monitoring)* and *Alternative SUB-2 (Institutional Controls with Monitoring)* to address surface and sub-surface soil contamination in the former Mishawum Lake Bed area.

Alternative SS-2 (Institutional Controls with Monitoring) protects human health by controlling potential exposures to contaminated soil through the implementation of institutional controls, whereby use of the properties for a day care facility would not be allowed, excavations would be restricted, and excavations without adequate worker health and safety precautions would be prohibited. This alternative includes a groundwater monitoring component to ensure that the contaminated soils left in place do not impact the groundwater and create unacceptable risks or hazards in the future.

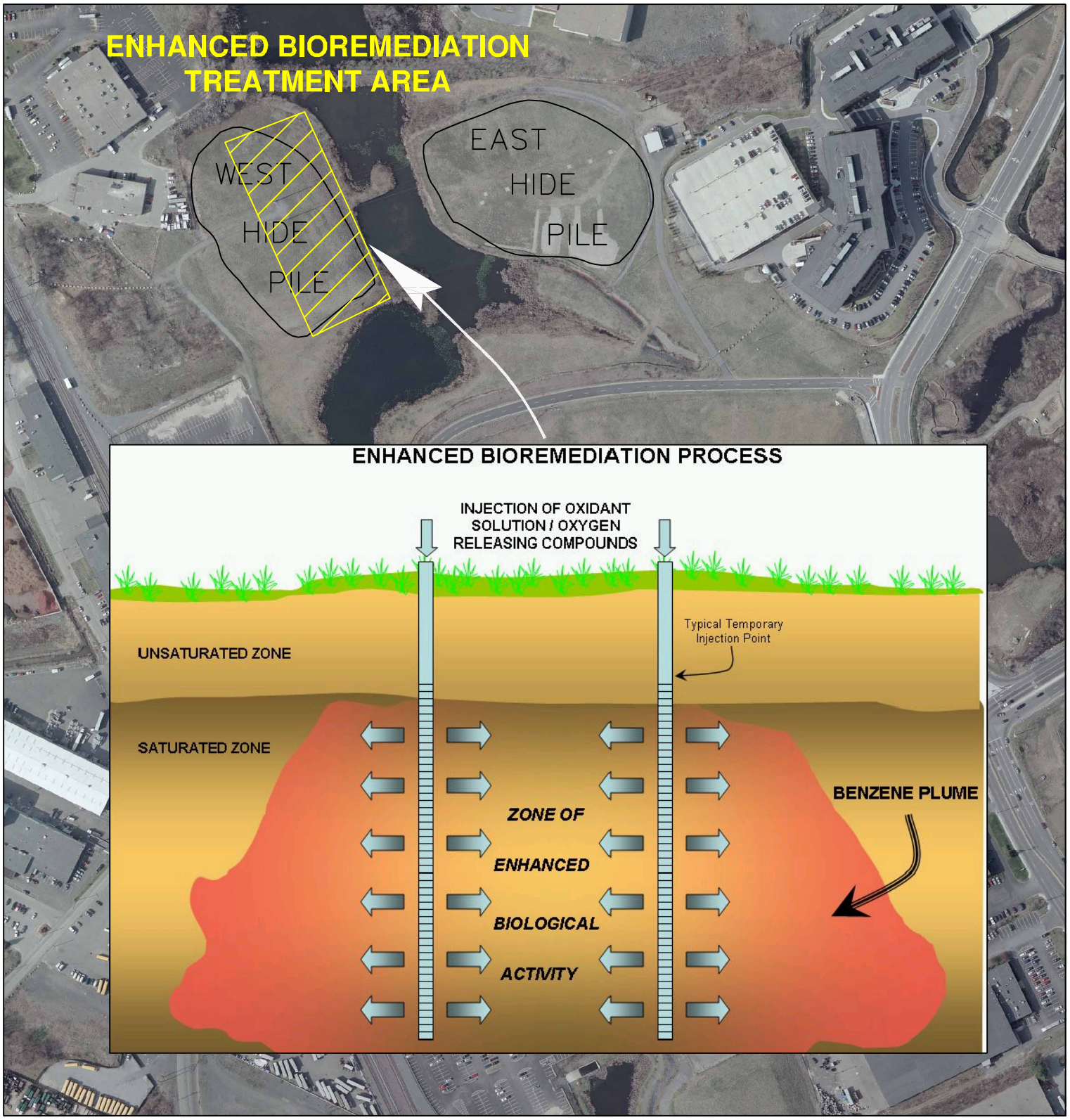
Alternative SUB-2 (Institutional Controls with Monitoring) protects human health by controlling potential exposures to contaminated soil through the implementation of institutional controls, whereby excavations would be restricted, and excavations without adequate worker health and safety precautions would be prohibited. This alternative includes a groundwater monitoring component to ensure that the contaminated soils left in place do not impact the groundwater and create unacceptable risks or hazards in the future.

GROUNDWATER: EPA's proposed alternative combines *Alternative GW-2 (Pond Intercept with Monitoring and Institutional Controls)* with a portion of *Alternative GW-4 (In-Situ Groundwater Treatment)* to address benzene contamination at the West Hide Pile.

Alternative GW-2 (Pond Intercept with Monitoring and Institutional Controls) protects human health by preventing or controlling potential exposures to contaminated groundwater through institutional controls. This alternative, coupled with *Alternative HBHA-4 (Storm Water Bypass, Sediment Retention, Partial Dredging and Restoration, and Monitoring*, also controls the downstream migration of contaminated groundwater by intercepting it at the northern portion of the HBHA Pond. GW-2 includes establishing institutional controls and conducting long-term monitoring of the groundwater, surface water and sediments to evaluate the status and migration of contaminants and the effectiveness of the remedy.

A portion of Alternative *GW-4 (Plume Intercept by In-Situ Groundwater Treatment and Monitoring with Institutional Controls)* will be used to address benzene contamination at the West Hide Pile. Specifically, in-situ enhanced bioremediation through oxygen injection/oxygen released compounds will be used to treat the benzene-contaminated groundwater beneath the West Hide Pile until it meets the site-specific cleanup goals. Alternative GW-4 includes design, construction, operation and maintenance of the in-situ treatment system. Similar to GW-2, Alternative GW-4 includes institutional controls and long-term monitoring of the groundwater, surface water, and sediments to evaluate the status and migration of contaminants and the effectiveness of the remedy. See site figure on next page.

Continued on page 5


ENHANCED BIOREMEDIATION
TREATMENT AREA
WEST
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ENHANCED BIOREMEDIATION PROCESS
INJECTION OF OXIDANT
SOLUTION / OXYGEN
RELEASING COMPOUNDS
Typical Temporary
Injection Point
UNSATURATED ZONE
SATURATED ZONE
BENZENE PLUME
ZONE OF
ENHANCED
BIOLOGICAL
ACTIVITY

Continued from page 4

SEDIMENTS: EPA's proposed alternative combines *Alternative HBHA-4 (Storm Water Bypass and Sediment Retention with Partial Dredging and Providing an Alternate Habitat)* with *Alternative NS-4 (Removal and Off-Site Disposal)* and *Alternative DS-2 (Institutional Controls)* to address arsenic contaminated sediments in HBHA Pond, along the near-shore of the Wells G&H Wetland and Cranberry Bog Conservation Area, and deeper wetland areas within the HBHA Wetland and Wells G&H Wetland.

Alternative HBHA-4 (Storm Water Bypass and Sediment Retention with Partial Dredging and Providing an Alternate Habitat) divides HBHA Pond into two main areas using a system of cofferdams. The southern portion will be dredged to remove contaminated sediments and restored. The northern portion of the Pond will be incorporated into the cleanup plan as a sediment retention basin. It will be used to intercept contaminated groundwater, and maintain a chemocline in the surface water to degrade and sequester contaminants in the deep portions of the pond (chemocline is a transition layer which separates the more contaminated deep surface water from the less contaminated shallow surface water). Between the first and second low-head cofferdams, surface water will be aerated to provide enhanced treatment prior to its discharge into the southern portion of the Pond. Contaminated sediments which accumulate in the northern portion of the pond will require periodic dredging.

Approximately 6,200 cubic yards of arsenic contaminated sediments will be excavated from the southern portion of HBHA Pond, dewatered and shipped off-site for disposal. The impacted area will be restored and a compensatory wetland will be constructed to make up for the wetlands lost in the northern portion. Other components of this alternative include preventing groundwater discharge, capping and stabilizing sediments along approximately 1,000 linear feet of the New Boston Street drainway with an impermeable cap (any loss of wetlands will also be compensated for elsewhere in the watershed); and capping and stabilizing the soils adjacent to the NSTAR and MBTA rights of way with a permeable cap. Long-term maintenance, inspections and monitoring will be required to evaluate the effectiveness of the remedy. See site figure on next page.

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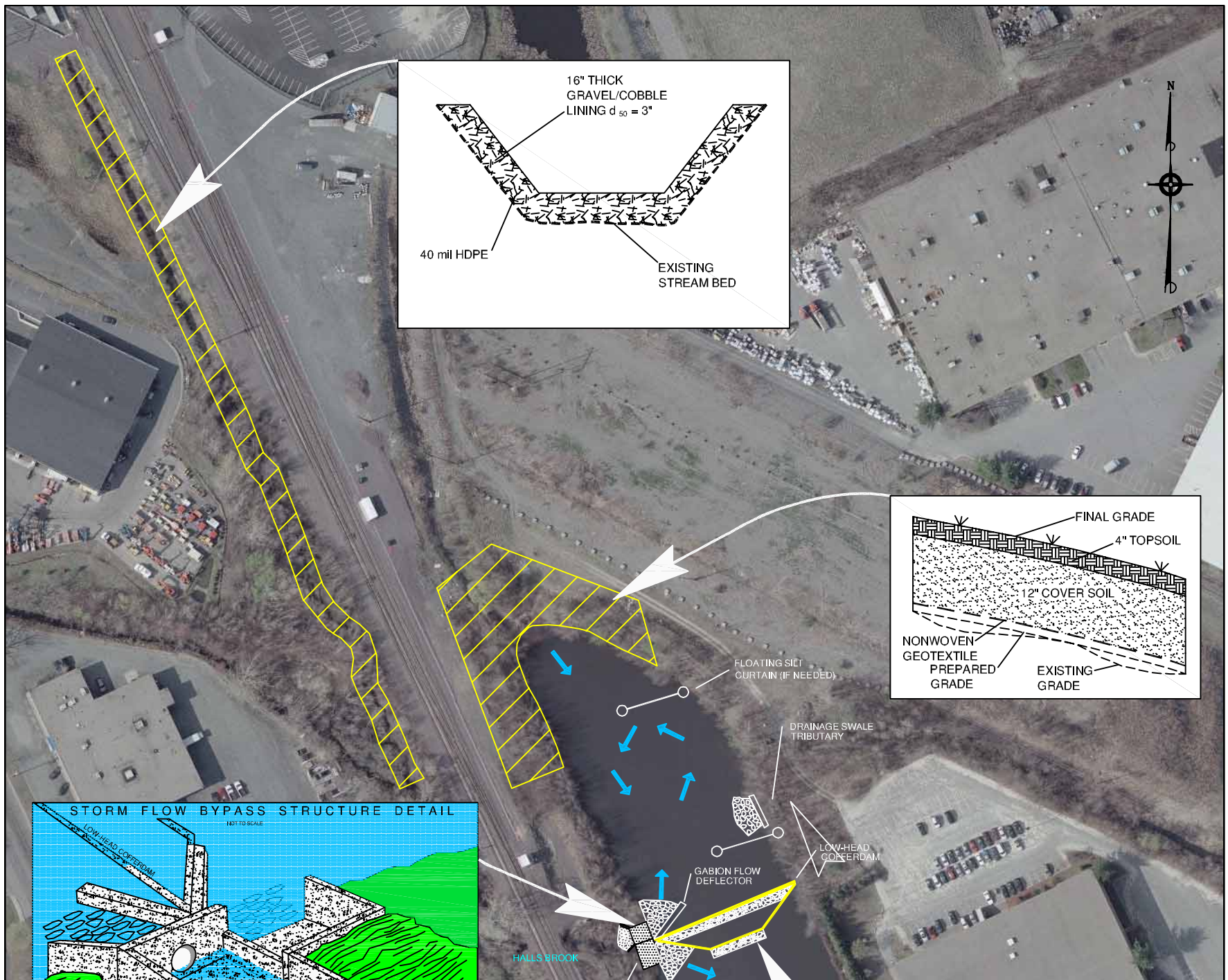

NOTES:

1. BACKGROUND IMAGE PROVEDED BY CITY OF WOBURN AS A MrSID FILE.
2. COORDINATE SYSTEM OF FIGURE: NAD 83 FEET.
3. ALL LOCATIONS TO BE CONSIDERED APPROXIMATE.
4. GRAPHIC SCALE SHOWN TO BE CONSIDERED APPROXIMATE.

GRAPHIC SCALE

0′ 100′ 200′

LEGEND

PROPOSED WATER FLOW DIRECTION AFTER SILTATION ENTITIES IN PLACE

SOIL/SEDIMENT CAP

ALTERNATIVE HBHA–4

CONCEPTUAL STORMWATER BYPASS & SEDIMENT RETENTION AREA

MSGRP FEASIBILITY STUDY

WOBURN, MASSACHUSETTS

FIGURE 4–3

DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	G. BULLARD	DATE:	JUNE 28, 2005
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Continued from page 5

Alternative NS-4 (Removal and Off-Site Disposal) applies to all near-shore contaminated sediments exceeding the site-specific cleanup goals for arsenic. Under this alternative, approximately 2,300 cubic yards of contaminated sediments (2,100 cubic yards from the Wells G&H wetland areas and 200 cubic yards from the Cranberry Bog Conservation Area) will be excavated, dewatered and shipped off-site for disposal. During the excavation activity, cofferdams will be installed to isolate the excavation areas from the open water and silt curtains and sedimentation booms will be used to prevent contaminated sediments from migrating downstream. Once completed, the sediment and vegetation will be replaced and the area will be monitored. Alternative NS-4 includes design, construction, and long-term periodic monitoring to evaluate the effectiveness of the remedy.

Alternative DS-2 (Institutional Controls) addresses arsenic contaminated sediments in deeper wetland areas which are generally inaccessible to humans, with the exception of a future dredging worker. Alternative DS-2 includes establishing institutional controls and conducting long-term monitoring of the groundwater, surface water and sediments to evaluate the status and migration of contaminants, and the effectiveness of the remedy.

SURFACE WATER: Deep surface water in HBHA Pond is being directly impacted by contaminated groundwater discharges and contaminated sediments in HBHA Pond. Since the contaminated groundwater discharges and contaminated sediments are being addressed by EPA's preferred alternatives *HBHA-4 (Storm Water Bypass and Sediment Retention with Partial Dredging and Providing an Alternate Habitat)* and *GW-2 (Pond Intercept with Monitoring and Institutional Controls)*, EPA's preferred alternative for addressing surface water at the site is *Alternative SW-2 (Monitoring)*.

Alternative SW-2 (Monitoring) includes conducting long-term monitoring of the groundwater, surface water and sediments to evaluate the status and migration of contaminants, and overall effectiveness of the remedy.

The entire remedy will also be subject to periodic 5-year reviews to ensure that the remedy remains protective in the long term.

The estimated cost of EPA's preferred alternative is broken down as follows:

Alternative SS-2:	$0.6 M
Alternative SUB-2:	$1.3 M
Alternative GW-2:	$3.9 M
Alternative GW-4:	$3.8 M
Alternative HBHA-4:	$9.2 M
Alternative NS-4:	$3.2 M
Alternative DS-2:	$0.5 M
Alternative SW-2:	$3.2 M

The total cost of EPA's preferred alternative is 25.7 million (cost projections are for 30 years).

Why Does EPA Recommend this Proposed Cleanup Plan?

Based on current information, EPA believes the proposed cleanup plan achieves the best balance among the criteria used to evaluate cleanup alternatives. The proposed cleanup provides both short-term and long-term protection of human health and the environment and is cost-effective.

During the comment period, EPA welcomes your comments on the proposed cleanup plan as well as the other technical approaches that EPA evaluated. These alternatives are summarized on the next page. Please consult the Feasibility Study, available at the Woburn and Winchester Public Libraries and at EPA Records Center in Boston, or on-line at the EPA Industri-plex web site address:

www.epa.gov/ne/superfund/sites/industriplex

Cleanup Levels

EPA, in consultation with the Commonwealth of Massachusetts, has established site-specific cleanup goals called Preliminary Remediation Goals (PRGs) for groundwater, soils, sediments and surface water. These PRGs are protective of human health and the environment based upon the exposure scenarios evaluated in the baseline human health and ecological risk assessments. The PRGs are described in Chapter 2 and Table 2-5 of the Feasibility Study.

Cleanup Alternatives Considered

Four Kinds of Cleanup

EPA looks at numerous technical approaches to determine the best way to reduce the risks presented by a Superfund site. EPA then narrows the possibilities to approaches that would effectively protect human health and the environment. Although reducing risks often involves combinations of highly technical processes, there are really only four basic options.

Take limited or no action: Leave the site as it is, or just restrict access and monitor it.

Contain contamination: Leave contamination where it is and cover or contain it in some way to prevent exposure to, or spread of, contaminants. This method reduces risks from exposure to contamination, but does not destroy or reduce it.

Move contamination off-site: Remove contaminated material (soil, groundwater, etc.) and dispose of it or treat it elsewhere.

Treat contamination on-site: Use a chemical or physical process at the site to destroy or remove the contaminants. Treated material can be left on-site. Contaminants captured by the treatment process are disposed in an off-site hazardous waste facility.

A Feasibility Study reviews the alternatives that EPA considers for cleanup at a Superfund site. EPA evaluated the following alternatives to address contaminated groundwater, surface water, sediment and soil at the Industri-plex Superfund Site Operable Unit 2 (including Wells G&H Superfund Site Operable Unit 3).

These areas present unique challenges and require different methods and approaches to meet the cleanup standards. For example, alternatives developed for one area of sediment contamination may not be practical or feasible for another. Also, the cleanup alternative for one area may need to be implemented in conjunction with another alternative.

During the comment period, EPA welcomes comments on the proposed cleanup plan, EPA's wetland impact determination and the cleanup alternatives summarized below. Please consult the Feasibility Study for more detailed information.

EPA EVALUATED THE FOLLOWING ALTERNATIVES TO ADDRESS SURFACE SOIL (0 TO 3 FEET BELOW GRADE) IN THE FORMER MISHAWUM LAKE BED AREA – (SS):

Alternative SS-1: No Action Alternative
This is required to provide a baseline for comparison (*i.e.*, what happens if nothing is done).

- Estimated Total Cost: $0

Alternative SS-2: Institutional Controls with Monitoring
Under this alternative, human exposures to arsenic-contaminated surface soil in the former Mishawum Lake bed area will be controlled through the use of institutional controls to restrict the use of the properties as day care facilities, restrict excavations on the properties, and require that any future excavations be conducted with adequate worker health and safety precautions. Permanent monitoring wells will be installed and sampled periodically to ensure that the contaminated soils left in place do not impact the groundwater. Additional information on this preferred alternative can be found on page 4.

- This is the preferred alternative.
- Estimated Total Cost: $0.6 Million

Alternative SS-3: Permeable Cover and Monitoring with Institutional Controls
Under this alternative arsenic-contaminated surface soil in the former Mishawum Lake bed area will be capped with a protective barrier. In addition, institutional controls will be put in place to restrict excavations in the properties and to ensure that the cover is monitored and remains protective of human health. This alternative includes periodic groundwater monitoring to ensure that the contaminated soils left in place do not impact the groundwater.

- Estimated Total Cost: $6 Million

Continued on page 8

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Alternative SS-4: Excavation and Off-Site Disposal
Under this alternative, all arsenic-contaminated surface soil above the cleanup goal in the former Mishawum Lake bed area will be excavated and disposed of off-site.

- Estimated Total Cost: $47.2 Million

Alternative SS-5: Excavation, Treatment, and On-Site Reuse
Under this alternative, all arsenic-contaminated surface soils above the cleanup goal in the former Mishawum Lake bed area will be excavated, treated onsite to remove the arsenic, and then backfilled into the excavation areas.

- Estimated Total Cost: $23 Million

EPA evaluated the following alternatives to address Subsurface Soil (3 to 15 feet below grade) in the former Mishawum Lake bed area - (SUB):

Alternative SUB-1: No Action Alternative
This is required to provide a baseline for comparison (*i.e.*, what happens if nothing is done).

- Estimated Total Cost: $0

Alternative SUB-2: Institutional Controls with Monitoring
Under this alternative, exposure to arsenic-contaminated subsurface soil in the former Mishawum Lake bed area will be controlled through the use of institutional controls to restrict excavations on the properties and require that any future excavations be conducted with adequate worker health and safety precautions. Under this alternative, permanent monitoring wells will be installed and sampled periodically to ensure that the contaminated soils left in-place do not impact the groundwater. Additional information on this preferred alternative can be found on page 4.

- This is the preferred alternative.
- Estimated Total Cost: $1.3 Million

Alternative SUB-3: Permeable Cover and Monitoring with Institutional Controls
Under this alternative, a protective cap will be placed over the contaminated soils. In addition, institutional controls will be put in place to restrict excavations on the properties and to ensure that the cover is monitored and remains protective of human health. Under this alternative, the groundwater will be sampled periodically to ensure that the contaminated soils left in place do not impact the groundwater.

- Estimated Total Cost: $8 Million

EPA evaluated the following Alternatives for Groundwater- (GW):

Alternative GW-1: No Action Alternative
This is required to provide a baseline for comparison (*i.e.*, what happens if nothing is done).

- Estimated Total Cost: $0

Alternative GW-2: Pond Intercept with Monitoring and Institutional Controls
This alternative uses institutional controls to prevent or control potential exposures to contaminated groundwater. Coupled with Alternative HBHA-4 (Storm Water Bypass, Sediment Retention, Partial Dredging and Restoration, and Monitoring), this alternative also controls the downstream migration of contaminated groundwater by intercepting it at the northern portion of HBHA Pond. This alternative, in combination with a portion of GW-4, includes long-term monitoring of groundwater, surface water and sediments. Additional information on this preferred alternative can be found on page 4.

- This is the preferred alternative, in combination with the portion of GW-4 that addresses benzene contamination at the West Hide Pile (in-situ enhanced bioremediation).
- Estimated Total Cost: $3.9 Million

Alternative GW-3: Plume Intercept by Groundwater Extraction, Treatment and Discharge and Monitoring with Institutional Controls
This alternative uses institutional controls to prevent or control potential exposures to contaminated groundwater and includes a groundwater extraction system to intercept and treat groundwater contaminant plumes prior to their discharge into the HBHA Pond and incorporates in-situ enhanced bioremediation treatment through oxygen injection to treat benzene at the West Hide Pile.

- Estimated Total Cost: $19.1 Million

Alternative GW-4: Plume Intercept by In-Situ Groundwater Treatment and Monitoring with Institutional Controls
This alternative uses institutional controls to prevent or control potential exposures to contaminated groundwater. In addition, in place treatment technologies will be used to address arsenic and benzene prior to discharging into HBHA Pond and in-situ enhanced bioremediation will be utilized to treat the benzene contamination at the West Hide Pile. Treatment of the benzene contamination at the West Hide Pile has been included in the preferred alternative. This alternative includes long-term monitoring of the groundwater, surface water and sediments. Additional information on the preferred alternative can be found on page 4. The portion of this alternative which calls for in-situ enhanced bioremediation at the West Hide Pile will be included as a supplement to the preferred alternative, GW-2.

- Estimated Total Cost of entire Alternative: $17.8 Million
- Estimated Cost of in-situ enhanced bioremedition at the West Hide Pile: $3.8 Million

Continued on page 9

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EPA evaluated the following alternatives for HBHA Pond Sediments - (HBHA)

Alternative HBHA-1: No Action Alternative
This is required to provide a baseline for comparison (*i.e.*, what happens if nothing is done).

- Estimated Total Cost: $0

Alternative HBHA-2: Monitoring
This alternative includes long-term monitoring of the sediments in HBHA Pond to confirm that the contamination in the sediment is naturally degrading or attenuating over time. In order to be protective, this alternative would require that alternative GW-2 is used to eliminate future contaminated groundwater discharges.

- Estimated Total Cost: $1.2 Million

Alternative HBHA-3: Subaqueous Cap
Under this alternative contaminated sediment in HBHA Pond will be covered with a protective barrier. This alternative includes institutional controls to ensure that the cap is maintained and remains protective.

- Estimated Total Cost: $5.3 Million

Alternative HBHA-4: Storm Water Bypass and Sediment Retention with Partial Dredging and Providing an Alternate Habitat
This alternative incorporates the northern portion of HBHA Pond into the cleanup remedy as a sediment retention area to minimize the downstream migration of metals and divides the northern and southern portion of the pond with a system of cofferdams. A by-pass system will be used to divert storm water flow below the northern portion of the pond. Arsenic contaminated sediment above the cleanup goal in the southern portion of HBHA Pond will be excavated and disposed of off-site. In addition, contaminated sediments along the New Boston Street drainway and contaminated soils along the NTAR and MBTA rights-of-way will be capped and stabilized. Any wetland losses will be mitigated with wetland compensation in the watershed. This alternative includes long term maintenance and monitoring. Additional information on this preferred alternative can be found on page 4.

- This is the preferred alternative.
- Estimated Total Cost: $9.2 Million

Alternative HBHA-5: Removal and Off-Site Disposal
Under this alternative, all arsenic-contaminated sediment above the cleanup goal in HBHA Pond will be excavated and disposed of off-site. In addition, contaminated sediments along the New Boston Street drainway and contaminated soils along the NSTAR and MBTA rights-of-way will be capped and stabilized.

- Estimated Total Cost: $3.8 Million

EPA evaluated the following alternatives for Near Shore sediments in the Wells G&H Wetlands and the Cranberry Bog Conservation Area - (NS):

Alternative NS-1: No Action Alternative
This is required to provide a baseline for comparison (*i.e.*, what happens if nothing is done).

- Estimated Total Cost: $0

Alternative NS-2: Institutional Controls
This alternative uses institutional controls to prevent or control potential exposures to contaminated sediments along the shore of the Wells G&H Wetlands and the Cranberry Bog Conservation Area.

- Estimated Total Cost: $0.3 Million

Alternative NS-3: Monitoring with Institutional Controls
This alternative uses institutional controls to prevent or control potential exposures to contaminated sediments along the shore of the Wells G&H Wetlands and the Cranberry Bog Conservation Area and includes long-term monitoring of the surface water and sediment.

- Estimated Total Cost: $1.8 Million

Alternative NS-4: Removal and Off-Site Disposal
Under this alternative, all arsenic-contaminated near-shore sediments above the cleanup goals in the Wells G&H Wetland and Cranberry Bog Conservation Area will be excavated and disposed of off-site. Additional information on this preferred alternative can be found on page 4.

- This is the preferred alternative.
- Estimated Total Cost: $3.2 Million

EPA evaluated the following alternatives for Deeper Wetland Sediments in the HBHA Wetlands and Wells G&H Wetlands - (DS):

Alternative DS-1: No Action Alternative
This is required to provide a baseline for comparison (i.e., what happens if nothing is done).

- Estimated Total Cost: $0

Alternative DS-2: Institutional Controls
This alternative uses institutional controls to prevent or control potential exposures to arsenic-contaminated sediments during any potential future dredging of deeper sediments in the HBHA and Wells G&H Wetlands. This alternative includes long-term monitoring of the surface water and sediment. Additional information on this preferred alternative can be found on page 4.

- This is the preferred alternative.
- Estimated Total Cost: $0.5 Million

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Alternative DS-3: Removal and Off-Site Disposal
Under this alternative, all arsenic-contaminated sediments above the cleanup goals deeper in the HBHA and Wells G&H Wetlands will be excavated and disposed of off-site.

- Estimated Total Cost: $117.3 Million

EPA evaluated the following alternatives for Surface Water in the HBHA Pond (SW):

Alternative SW-1: No Action Alternative
This is required to provide a baseline for comparison (*i.e.*, what happens if nothing is done).

- Estimated Total Cost: $0

Alternative SW-2: Monitoring
Under this alternative, the surface water will be monitored to ensure that contamination attenuates over time through natural processes. For this alternative to be successful it will need to be implemented in conjunction with other alternatives to address groundwater and sediment contamination in the HBHA Pond such as Alternatives GW-2 and HBHA-4. Additional information on this preferred alternative can be found on page 4.

- This is the preferred alternative.
- Estimated Total Cost: $3.2 Million

Alternative SW-3: Monitoring and Providing an Alternate Habitat
Under this alternative, the surface water will be monitored to ensure that contamination attenuates over time through natural processes. This alternative also includes constructing a new wetland in the watershed to compensate for the loss of on-site wetlands.

- Estimated Total Cost: $10.8 Million

The Nine Criteria For Choosing a Cleanup

Nine criteria are used to evaluate the cleanup alternatives and select a remedy. Of the nine, protection of human health and the environment and compliance with ARARs are considered threshold requirements that must be met by the selected remedy. EPA balances its consideration of alternatives with respect to long term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short term effectiveness; implementability; and cost. State and community concerns are modifying criteria and may prompt EPA to modify the preferred alternative or choose another alternative. Following are definitions of the nine criteria.

1. **Overall protection of human health and the environment:** Will it protect people and the plant and animal life on and near the site? EPA will not choose a plan that does not meet this basic criterion.

2. **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs):** Does the alternative meet all federal and state environmental statutes, regulations and requirements? EPA will not choose a plan that does not meet this basic criterion.

3. **Long-term effectiveness and permanence:** Will the effects of the cleanup plan last or could contamination cause future risk?

4. **Reduction of toxicity, mobility or volume through treatment:** Does the alternative reduce the harmful effects of the contaminants, the spread of contaminants, and the amount of contaminated material through treatment?

5. **Short-term effectiveness:** How soon will site risks be adequately reduced? Could the cleanup cause short-term hazards to workers, residents or the environment?

6. **Implementability:** Is the alternative technically feasible? Are the right goods and services (i.e. treatment machinery, space at an approved disposal facility) available for the plan?

7. **Cost:** What is the total cost of an alternative over time?

8. **State acceptance:** Do state environmental agencies agree with EPA's proposal?

9. **Community acceptance**:What objections, suggestions or modifications does the public offer during the comment period?

Evaluation of Alternatives

As described below, EPA has evaluated how well each of the cleanup alternatives meets the first seven criteria. Once comments from the state and the community are received, EPA will select the final cleanup plan. Various cleanup alternatives were evaluated for the seven areas of the site:

Surface Soils (SS)
Subsurface Soil (SUB)
Groundwater (GW)
Halls Brook Holding Area Pond Sediments (HBHA)
Near Shore Sediments (NS)
Deeper Wetland Sediments (DS)
Surface Water (SW)

Below is a brief summary of the evaluation of the various alternatives. A more comprehensive evaluation can be found in the Feasibility Study.

1. Overall Protection of Human Health and the Environment:

Surface Soil (SS): The No Action Alternative, SS-1, does not protect human health or the environment. The Preferred Alternative, SS-2, would be protective of human health and the environment through institutional controls prohibiting the use of the property for day care facilities and prohibiting excavation without regulatory oversight and appropriate precautions. Alternative SS-3 would provide enhanced protection, since a permeable cover or barrier would further restrict exposure to contaminated surface soil. Alternatives SS-4 and SS-5 provide the highest level of protection for human health and the environment because all contaminated surface soil exceeding the proposed cleanup standards would either be removed from the site or treated.

Subsurface Soil (SUB): The No Action Alternative, SUB-1, does not protect human health or the environment. The preferred alternative, SUB-2, would provide protection from exposure to contaminated soils through institutional controls prohibiting excavation without regulatory oversight and appropriate precautions. Alternative SUB-3 would provide enhanced protection since a permeable cover or barrier would further restrict exposure to contaminated surface soil. This alternative also requires institutional controls and land-use restrictions to protect the integrity of the cover.

Groundwater (GW): The No Action Alternative, GW-1, does no protect human health or the environment. The Preferred Alternative, GW-2, would provide protection from exposure to contaminated groundwater through institutional controls. Alternatives GW-3 and GW-4 would provide enhanced protection to human health and the environment through institutional controls restricting groundwater use.

Halls Brook Holding Area Pond Sediments (HBHA): Neither the No Action Alternative, HBHA-1, nor HBHA-2, which calls for monitoring, would be protective of the environment. Alternative HBHA-3, which calls for the installation of a permeable cover or barrier over contaminated sediments in the bottom of the pond, may provide enhanced protection for benthic organisms. However, this alternative requires that groundwater discharges

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to the pond be eliminated, otherwise the cap materials could become recontaminated.

The preferred alternative, HBHA-4, which calls for the removal of contaminated sediments from the southern portion of HBHA Pond, would provide protection to benthic invertebrates in this area of the pond. Since the northern portion of the pond would be incorporated into the cleanup remedy and used to treat contaminated groundwater discharges, this area would not provide protection to the benthic organisms in the short term. However, an alternative wetland would be constructed in its place.

Alternative HBHA-5 provides the highest level of protection for the environment because all contaminated sediment in the northern and southern portions of HBHA Pond would be removed. However, this alternative also requires that groundwater discharges to HBHA Pond be eliminated so that the pond does not become recontaminated.

Near Shore Sediments (NS): The No Action Alternative, NS-1, does not protect human health. Alternatives NS-2 and NS-3 would provide protection from exposure to contaminated sediments through institutional controls. NS-3 would also include periodic monitoring. The Preferred Alternative, NS-4, provides the highest level of protection for human health because all contaminated sediments exceeding the cleanup standards would be removed.

Deeper Wetland Sediments (DS): The No Action Alternative, DS-1, does not protect human health. The Preferred Alternative, DS-2, would provide protection from exposure to contaminated sediments through institutional controls. Alternative DS-3 provides the highest level of protection for human health because all contaminated sediments exceeding the cleanup standards would be removed. However, the marginal benefit derived from Alternative DS-3 over Alternative DS-2 would be low, since these sediments are inaccessible to humans.

Surface Water (SW): The No Action Alternative, SW-1, does not protect the environment. The Preferred Alternative, SW-2, which includes monitoring, and Alternative SW-3, which includes monitoring and the construction of an alternate wetlands habitat, would be protective if implemented in conjunction with other groundwater cleanup alternatives.

2. Compliance with Applicable or Relevant and Appropriate Environmental Regulations (ARARs):

Surface Soil (SS): The No Action Alternative, SS-1, does not comply with the ARARs for the site. The Preferred Alternative, SS-2, and Alternatives SS-3, SS-4 and SS-5 would comply with all ARARs for the site.

Subsurface Soil (SUB): The No Action Alternative, SUB-1, does not comply with ARARs for the site. The Preferred Alternative, SUB-2, and Alternative SUB-3 would comply with all ARARs.

Groundwater (GW): The No Action Alternative, GW-1, does not comply with ARARs for the site. The Preferred Alternative, GW-2, and Alternatives GW-3 and GW-4 would comply with all ARARs through institutional controls restricting groundwater use.

Halls Brook Holding Area Pond Sediments (HBHA): The No Action Alternative, HBHA-1, and Alternative HBHA-2 do not comply with ARARs for the site. Alternative HBHA-3, the Preferred Alternative, HBHA-4, and HBHA-5 would comply with all ARARs.

Near Shore Sediments (NS): The No Action Alternative, NS-1, does not comply with ARARs for the site. Alternatives NS-2 and NS-3 would comply with some, but not all ARARs for the site. The Preferred Alternative, NS-4, would comply with all ARARs for the site.

Deeper Wetland Sediments (DS): The No Action Alternative, DS-1, does not comply with ARARs. Alternative DS-2, which includes monitoring and institutional controls, would meet the ARARs. Alternative DS-3, which removes and disposes of contaminated sediments off-site, complies with all ARARs.

Surface Water (SW): The No Action Alternative, SW-1, would not comply with ARARs. If implemented in conjunction with other groundwater and sediment remedial alternatives, such as Alternative HBHA-4, Alternative SW-2, which provides monitoring, and Alternative SW-3, which provides monitoring and an alternate habitat, would comply with ARARs if they were implemented in conjunction with other groundwater and sediment alternatives.

3. Long Term Effectiveness and Permanence:

Surface Soil (SS): The No Action Alternative, SS-1, does not provide any long-term effectiveness or permanence. The Preferred Alternative, SS-2, would provide long-term effectiveness and permanence through institutional controls. Alternative SS-3 would provide additional long term effectiveness and permanence through institutional controls prohibiting disturbance of the cover. Alternatives SS-4 and SS-5 provide the highest degree of long-term effectiveness and permanence because the contaminated soil would be removed.

Subsurface Soil (SUB): The No Action Alternative, SUB-1, does not provide any long-term effectiveness or permanence. The Preferred Alternative, SUB-2, would provide long-term effectiveness and permanence through institutional controls. Alternative SUB-3 would also provide long term effectiveness and permanence through institutional controls prohibiting disturbance of the cover.

Groundwater (GW): The No Action Alternative, GW-1, does not provide any long-term effectiveness or permanence. GW-2, the Preferred Alternative, would provide long-term effectiveness and

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permanence through institutional controls limiting groundwater use. Alternatives GW-3 and GW-4 would also be effective in the long term, however GW-3 would require more extensive operation and maintenance then GW-4.

Halls Brook Holding Area Pond Sediments (HBHA): The No Action Alternative, HBHA-1, does not provide any long-term effectiveness or permanence. Alternative HBHA-2 would provide marginal long-term effectiveness and permanence, and long-term monitoring would be required to evaluate risks associated with contaminants left in place. Alternative HBHA-3 would provide enhanced long term effectiveness and permanence provided there is no erosion of the permeable cover and contamination from groundwater discharges is eliminated.

The Preferred Alternative, HBHA-4, provides a greater level of long-term effectiveness since a majority of contaminated sediments would be removed from the southern portion of HBHA Pond. Alternative HBHA-5 provides the highest level of long-term effectiveness and permanence because the contaminated sediment would be removed from the site.

Near Shore Sediments (NS): The No Action Alternative, NS-1, does not provide any long-term effectiveness or permanence. Alternatives NS-2 and NS-3 would provide long-term effectiveness and permanence through institutional controls. The Preferred Alternative, NS-4, provides the highest degree of long-term effectiveness and permanence because the sediments exceeding the cleanup standards would be excavated.

Deeper Wetland Sediments (DS): The No Action Alternative, DS-1, does not provide any long-term effectiveness or permanence. The Preferred Alternative DS-2, would provide long-term effectiveness and permanence through institutional controls. Alternative DS -3 provides the highest degree of long-term effectiveness and permanence because the sediments exceeding the cleanup standards would be excavated.

Surface Water (SW): The No Action Alternative, SW-1, does not provide any long-term effectiveness or permanence. The Preferred Alternative, SW-2, which includes monitoring, and Alternative SW-3, which also includes monitoring provide greater long-term effectiveness. Alternative SW-3 provides the greatest level of permanence by creating an alternate wetlands habitat.

4. Reduction of Toxicity, Mobility or Volume Through Treatment:

Surface Soil (SS): The No Action Alternative, SS-1, the Preferred Alternative, SS-2, and Alternative SS-3 do not include treatment. Alternative SS-4 may provide limited off-site treatment, if necessary, to qualify for disposal at a licensed landfill. Alternative SS-5 reduces the toxicity and mobility of the contaminants by using a "soil washing" process to remove arsenic from the soil before using the treated soil as backfill.

Subsurface Soil (SUB): The No Action Alternative, SUB-1, the Preferred Alternative, SUB-2, and Alternative SUB-3 do not reduce toxicity, mobility or volume through treatment or other means.

Groundwater (GW): The No Action Alternative, GW-1, offers no treatment other than long-term natural attenuation processes that may occur with organic contaminants. The Preferred Alternative, GW-2, controls the migration of contaminated groundwater by intercepting contamination at the HBHA Pond, and makes use of the naturally occurring processes in HBHA Pond to precipitate metals and degrade organic contaminants.

Alternative GW-2 does not actively treat groundwater prior to discharge to HBHA Pond, except for natural attenuation processes that may occur. When combined with Alternative HBHA-4, as EPA is proposing to do, GW-2 would control or reduce downstream migration of inorganic contaminants during storm events.

Both Alternatives GW-3 and GW-4 employ technologies to prevent contaminated groundwater from discharging into HBHA Pond and also destroy or remove target contaminants from the groundwater. Alternative GW-3 is an ex-situ system while Alternative GW-4 is an in-situ design. Both technologies are able to reduce the toxicity, mobility and volume of contaminants in the groundwater and both treatment processes are irreversible.

Halls Brook Holding Area Pond Sediments (HBHA): The No Action Alternative, HBHA-1, HBHA-2, and HBHA-3 do not treat contaminants. Alternative HBHA-3 reduces the mobility of contaminated sediments by placing a cap over them. The Preferred Alternative, HBHA-4, and Alternative HBHA-5 may include limited off-site treatment of dredged sediments, if necessary, to qualify for disposal at a licensed landfill. HBHA-4 also reduces the mobility of contaminated sediments by creating a retention area where contaminated sediments are contained and periodically removed.

Near Shore Sediments (NS): The No Action Alternative, NS-1, and Alternatives NS-2 and NS-3 do not treat contaminants. Alternatives NS-2 and NS-3 may reduce mobility in the long-term if contaminated sediments are buried by the accumulation and deposition of uncontaminated sediments. The Preferred Alternative, NS-4, may include limited off-site treatment if necessary to qualify for disposal at a landfill.

Deeper Wetland Sediments (DS): The No Action Alternative, DS-1 and the Preferred Alternative, DS-2, do not treat or reduce the toxicity of the deeper wetland sediments, unless other alternatives are implemented upstream to reduce downstream contaminant migration and clean sediments are given an opportunity to accumulate and deposit on top of contaminated sediments, in essence capping the contaminated sediment. Alternative DS-3

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may include limited off-site treatment, if necessary, to qualify for disposal at a licensed landfill.

Surface Water (SW): The No Action Alternative, SW-1, the Preferred Alternative, SW-2, and Alternative SW-3 do not include treatment.

5. Short-Term Effectiveness:

Surface Soil (SS): The No Action Alternative, SS-1, would not be effective in the short-term or cause any short-term impacts because the alternative does not require any action. Alternatives SS-2 and SS-3, which call for the installation of institutional controls, will effectively limit risks to human health in the short term. In addition, the cover required as part of SS-3 will become effective upon its construction. Alternatives SS-4 and SS-5 will become effective once the contaminated soils are excavated and disposed of off-site or treated.

The Preferred Alternative, SS-2, would have limited impacts on property owners where institutional controls restrict land use. Alternatives SS-3, SS-4, and SS-5 would have the most short-term impacts on the community, including an increase in traffic during construction activities.

Impacts to workers would be minimal since construction activities would be completed in accordance with appropriate health and safety procedures and potential risks and hazards associated with fugitive dust emissions would be addressed with prescribed engineering controls. No adverse environmental impacts are anticipated from any alternative.

Subsurface Soil (SUB): The No Action Alternative, SUB-1, would not be effective in the short term or cause any short-term impacts because the alternative does not require any action. Alternatives SS-2 and SS-3 which call for the installation of institutional controls will effectively limit risks to human health in the short term. In addition, the permeable cover required as part of SS-3 will become effective upon its construction.

The Preferred Alternative, SUB-2, would have limited impacts on property owners where institutional controls restrict land use. Alternative SUB-3 would have the most significant short-term impacts on the community including an increase in traffic during construction activities. Impacts to individual property owners would be significant since large portions of property would require a soil cover and the use of parking areas and road ways would be temporarily restricted.

Impacts to workers would be minimal since construction activities would be completed in accordance with appropriate health and safety procedures and potential risks and hazards associated with fugitive dust emissions would be addressed with prescribed engineering controls. No adverse environmental impacts are anticipated from any alternative.

Groundwater (GW): The No Action Alternative, GW-1, would not be effective in the short term or cause any short-term impacts because the alternative does not require any action. Alternative GW-2, the Preferred Alternative, and Alternatives GW-3 and GW-4 which call for the installation of institutional controls will effectively limit risks to human health in the short term.

The Preferred Alternative, GW-2, would have limited impacts on property owners since the imposition of institutional controls would restrict groundwater use. Alternatives GW-3 and GW-4 would have limited short-term impacts on the community, including an increase in traffic during construction activities. Fugitive dust emissions would be addressed with engineering controls. Alternatives GW-3 and GW-4 may have limited adverse environmental impacts during construction, however engineering controls and approved construction methods would be used to minimize these risks.

Halls Brook Holding Area Pond Sediments (HBHA): The No Action Alternative, HBHA-1, would not be effective in the short term or cause short-term impacts because the alternative does not require any action. Alternative HBHA-2 would not cause any short-term impacts to the community because the alternative only requires monitoring. Alternative HBHA-3, the Preferred Alternative, HBHA-4, and Alternative HBHA-5 would have the most short-term impacts on the community including an increase in traffic during construction activities. Fugitive dust emissions would be addressed with engineering controls.

Alternative HBHA-3 would have potential significant environmental impacts from the displacement and migration of contaminated sediments during the placement of the cap. However, these potential risks could be minimized through engineering controls that minimize and control suspended solids.

The Preferred Alternative, HBHA-4, and Alternative HBHA-5 would have the most significant short-term environmental impacts due to the dredging activities. Benthic communities destroyed during the sediment removal would re-establish themselves over time.

Near Shore Sediments (NS): The No Action Alternative, NS-1, would not be effective in the short term or cause any short-term impacts because the alternative does not require any action. Alternatives NS-2 and NS-3 would have minor impacts on the community and workers installing protective fencing.

The Preferred Alternative, NS-4, would have the most short-term impacts on the community, including an increase in traffic during construction activities as well as an increase in organic odors while excavating along shoreline wetlands. Fugitive dust emissions would be minimized and addressed with engineering controls.

Alternative NS-4 would also cause short-term environmental impacts during excavation restoration of the wetland. These impacts would be minimized by engineering controls. Benthic communities

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destroyed during the sediment removal would re-establish themselves over time.

Deeper Wetland Sediments (DS): The No Action Alternative, DS-1, and the Preferred Alternative, DS-2, would not cause any short-term impacts to the community or on-site workers because the alternatives do not require any action. Alternative DS-3 would have the most significant short-term impacts on the community and surrounding businesses, including an increase in traffic during construction activities, as well as an increase in organic odors while excavating in the wetlands. Impacts to individual property owners would be significant since large portions of property would be utilized to implement the alternative. Fugitive dust emissions would be minimized and addressed with engineering controls.

Alternative DS-3, which requires constructing haul roads, potential cofferdams and intrusions into the wetland areas to access deep sediments, would cause extensive and severe environmental impacts. These impacts would be minimized by engineering controls during the remediation. Benthic communities and other wetland habitat features that are destroyed during sediment removal would eventually re-establish themselves over time.

Surface Water (SW): The No Action Alternative, SW-1, would not cause any short-term impacts to the community or on-site workers because the alternative does not require any action. The Preferred Alternative, SW-2, would not cause any short-term impact on the community. Alternative SW-3 would have the most short-term impacts to the community due to the construction of an alternate wetlands habitat.

6. Implementability:

Surface Soil (SS): The No Action Alternative, SS-1, would be the easiest to implement because there are no remedial actions required. The Preferred Alternative, SS-2, would be the next easiest to implement. Alternatives SS-3, SS-4 and SS-5 would be more difficult than the other alternatives due to the area requiring remediation, the proximity to active commercial and light industrial properties, and the additional construction activities associated with these alternatives.

Subsurface Soil (SUB): The No Action Alternative, SUB-1, would be the easiest to implement because there are no remedial actions. The Preferred Alternative, SUB-2, would be the next easiest to implement. Alternative SUB-3 would be more difficult than the other alternatives due to the area requiring remediation, the proximity to active commercial and light industrial properties, and the additional construction activities associated with this alternative.

Groundwater (GW): The No Action Alternative, GW-1, is the easiest to implement because there are no remedial actions required. The Preferred Alternative, GW-2, would be the next easiest to implement. Alternative GW-3 would be more difficult than Alternative GW-2 due to the complexities involved with a multi-process treatment system and typical construction issues. However, technologies for Alternative GW-3 are reliable and proven.

Alternative GW-3 requires more extensive operation and maintenance than any other alternative and would likely require a full-time treatment plant operator. Alternative GW-4 could be the most difficult to implement due to the deep excavations required to install the reactive wall and uncertainties associated with the technology. However, these uncertainties could be addressed during the pre-design investigation.

Halls Brook Holding Area Pond Sediments (HBHA): The No Action Alternative, HBHA-1, would be the easiest to implement because there are no remedial actions required. Alternative HBHA-2 would be the next easiest since it only involves collecting sediment samples. Alternative HBHA-3, the Preferred Alternative, HBHA-4, and Alternative HBHA-5 would be more difficult than Alternatives HBHA-1 and HBHA-2 due to the construction activities involved in these alternatives, including dredging, water treatment, sediment dewatering, and the need for specialized equipment and skilled workers.

The Preferred Alternative, HBHA-4, is more difficult than Alternative HBHA-5 because it is further compounded by the construction of a sediment retention area and larger alternate/compensatory wetland habitat. All alternatives except the Preferred Alternative, HBHA-4, require that contaminated groundwater discharges be eliminated prior to constructing the remedy so that the excavated or capped areas do not become re-contaminated.

Near Shore Sediments (NS): The No Action Alternative, NS-1, would be the easiest to implement because there are no on-site remedial actions required. Alternatives NS-2 and NS-3 would be the next easiest since the only activities required are posting fences and signs. Alternative NS-3 would also include periodic sampling of surface water and sediment. The Preferred Alternative, NS-4, would be more difficult than the others due to the excavation, dewatering, water treatment and wetlands restoration activities involved in this alternative.

Deeper Wetland Sediments (DS): The No Action Alternative, DS-1, and the Preferred Alternative DS-2 would be the easiest to implement because there are no on-site remedial actions required.

Alternative DS-3 would be the most difficult to complete due to the complexities involved in accessing the interior portions of the wetlands with heavy equipment to conduct the excavation, dewatering, water treatment and wetlands restoration activities involved in this alternative.

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Surface Water (SW): The No Action Alternative, SW-1, and the Preferred Alternative, SW-2, would be the easiest to implement because there are no on-site remedial actions required. The Preferred Alternative, SW-2, would require additional effort associated with monitoring. Alternative SW-3 would be the most difficult to implement due to locating and constructing an alternate wetlands habitat.

7. Cost:

See the attached table for the estimated costs of each alternative.

8. State Acceptance:

State acceptance will be evaluated based on comments received during the 30 day comment period.

9. Community Acceptance:

Community acceptance will be evaluated based on comments received during the 30 day formal comment period. EPA will accept written comments throughout the formal comment period and hold a public hearing on July 27, 2005 to accept formal verbal comments.

The following table presents a comparative analysis of the cleanup alternatives.

TABLE 4-29
COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES
DRAFT FINAL MSGRP FEASIBILITY STUDY
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

MEDIUM	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction of Toxicity, Mobility, or Volume Through Treatment	Short-Term Effectiveness	Implementability	COSTS			Preferred Remedy Costs	
							Capital Costs	Annual O&M Costs	Present Worth		
SURFACE SOIL (SS)											
Alternative SS-1: No Action	□	□	□	□	■	■	$0	$0	$0		
Alternative SS-2: Institutional Controls	◘	■	◘	□	■	■	$185,000	$30,000	$600,000	$600,000	
Alternative SS-3: Permeable Cover with Institutional Controls	■	■	◘	□	◘	◘	$5,329,000	$48,000	$5,992,000		
Alternative SS-4: Excavation and Off-Site Disposal	■	■	■	□	◘	■	$47,172,000	$0	$47,172,000		
Alternative SS-5: Excavation, Treatment, and On-Site Reuse	■	■	■	■	◘	◘	$22,993,000	$0	$22,993,000		
SUBSURFACE SOIL (SUB)											
Alternative SUB-1: No Action	□	□	□	□	◘	■	$0	$0	$0		
Alternative SUB-2: Institutional Controls	■	■	◘	□	■	■	$315,000	$108,000 (yr 1-10) $30,000 (yr 11-30)	$1,276,000	$1,276,000	
Alternative SUB-3: Permeable Cover with Institutional Controls	■	■	■	□	◘	◘	$6,495,000	$159,000 (yr 1-10) $81,000 (yr 11-30)	$8,070,000		
GROUNDWATER (GW)											
Alternative GW-1: No Action	□	□	□	□	◘	◘	$0	$0	$0		
Alternative GW-2: Pond Intercept with Monitoring and Institutional Controls	◘	■	◘	◘	◘	■	$432,000	$410,000 (yr 1-5) $205,500 (yr 6-30)	$3,918,000	$3,918,000	
Alternative GW-3: Plume Intercept by Groundwater Extraction, Treatment and Discharge and Monitoring with Institutional Controls	■	■	■	■	◘	◘	$4,739,000	$1,297,500 (yr 1-2) $1,040,000 (yr 3-30)	$19,137,000		
Alternative GW-4: Plume Intercept by In-Situ Groundwater Treatment, and Monitoring with Institutional Controls	■	■	◘	◘	◘	□	$13,089,000	$444,000 (yr 1-5) $222,000 (yr 6-30)	$17,792,000	**$3,752,000**	**Enhanced Bioremediation piece only for West Hide Pile**
HBHA POND SEDIMENTS (HBHA)											
Alternative HBHA-1: No Action	□	□	□	□	◘	◘	$0	$0	$0		
Alternative HBHA-2: Monitoring	□	□	□	□	◘	■	$0	$144,000/yr 1-2 $70,000/yr 3-30	$1,201,000		
Alternative HBHA-3: Subaqueous Cap	■	■	◘	□	◘	□	$3,160,000	$144,000	$5,291,000		
Alternative HBHA-4: Storm Water Bypass and Sediment Retention with Partial Dredging and Providing an Alternate Habitat	■	◘	◘	◘	◘	◘	$5,419,000	$176,000/yr 1-3 $100,000/yr 4-30 $1,136,500 (every 5yrs)	$9,187,000	$9,187,000	
Alternative HBHA-5: Removal and Off-Site Disposal	■	■	■	◘	◘	◘	$3,560,000	$95,000/yr 1-3 only	$3,810,000		
NEAR SHORE SEDIMENTS (NS)											
Alternative NS-1: No Action	□	□	□	□	◘	◘	$0	$0	$0		
Alternative NS-2: Institutional Controls	◘	◘	◘	□	■	■	$70,000	$16,300	$338,000		
Alternative NS-3: Monitored Natural Recovery	◘	◘	◘	□	■	■	$70,000	$135,000	$1,807,000		
Alternative NS-4: Removal and Off-Site Disposal	■	■	■	◘	◘	◘	$2,997,000	$95,000/yr 1-3 only	$3,247,000	$3,247,000	
DEEP SEDIMENTS (DS)											
Alternative DS-1: No Action	□	□	□	□	■	◘	$0	$0	$0		
Alternative DS-2: Monitoring with Institutional Controls	◘	◘	◘	□	■	■	$44,000	$30,000	$459,000	$459,000	
Alternative DS-3: Removal and Off-Dite Disposal	■	■	■	◘	□	◘	$116,968,000	$100,000/yr 1-3 only	$117,378,000		
SURFACE WATER (SW)											
Alternative SW-1: No Action	□	◘	□	□	■	◘	$0	$0	$0		
Alternative SW-2: Monitoring	□	◘	◘	□	■	■	$0	$236,000	$3,226,000	$3,226,000	
Alternative SW-3: Monitoring and Providing an Alternate Habitat	◘	◘	■	□	■	◘	$7,807,000	$236,000	$10,797,000		
										$25,665,000	

□ Low rating in comparison to other alternatives for specificed criterion

◘ Mid-range rating in comparison to other alternatives for specificed criterion

■ High rating in comparison to other alternatives for specificed criterion

Potential Impacts To The Community

The proposed cleanup plan could potentially have the following impacts on the community:

Air Quality:
During excavation activities, air monitoring will be performed to protect workers and ensure that the surrounding neighborhood air quality is not impacted. Dust suppression methods will be employed as necessary.

Truck Traffic:
There will be an increase in truck traffic during construction and excavation activities. EPA will notify the community before this activity begins.

Impacts to Wetlands

Under federal wetlands laws, EPA is required to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands." Using these principles, EPA is further required to select the "least environmentally damaging practicable alternative" for reducing environmental risks at the site. Because contaminated groundwater will continue to flow towards HBHA Pond, the "least environmentally damaging practicable alternative" is EPA's preferred remedy of dividing the HBHA Pond into a northern area, which receives the contaminated groundwater, and a southern area. Contaminated sediments accumulated in the northern area will be dredged periodically. Compensatory wetlands mitigation (replacing wetlands impacted by the remedy) will be required for the impacts to the northern area of the HBHA Pond and capped areas along the New Boston Street drainway.

Contaminated sediment in the southern area of the HBHA Pond and near shore sediments along the Wells G&H Wetland and Cranberry Bog Conservation Area will be excavated and disposed of off-site. Following the excavation activities, the wetlands will be restored in accordance with state and federal wetland laws.

The implementation of the preferred remedy requires that all necessary measures be taken to minimize potential harm to the wetland and floodplain areas.

What is a Formal Comment?

To make a formal comment you need only speak during the public hearing on Wednesday, July 27, 2005 or submit a written comment during the comment period, which ends on August 1, 2005.

Federal regulations require EPA to distinguish between "formal" and "informal" comments. While EPA uses your informal comments throughout the cleanup process, EPA is required to respond to formal comments on the proposed plan in writing only. EPA will not respond to your comments during the formal hearing on Wednesday, July 27, 2005.

The fact that EPA responds to formal comments in writing only does not mean that EPA cannot answer questions. Once the meeting moderator announces that the formal hearing portion of the meeting is closed, EPA can respond to informal questions.

EPA will review the transcript of all formal comments received at the hearing, and all written comments received during the formal comment period, before making a final cleanup decision. EPA will then prepare a written response to all the formal written and oral comments received.

Your formal comment will become part of the official public record. The transcript of comments and EPA's written responses will be issued in a document called a Responsiveness Summary when EPA releases the final cleanup decision.

Next Steps

This fall, EPA expects to have reviewed all comments and signed a Record of Decision document describing the chosen cleanup plan. The Record of Decision and a summary of responses to public comments will then be made available to the public at the site information repositories and on EPA's web site.

Site Contacts

If you have any questions about the site or would like more information, you may call or write to:

Joseph F. LeMay, EPA Remedial Project Manager
One Congress Street, Suite 1100 (HBO)
Boston, MA 02114
(617) 918-1323
lemay.joe@epa.gov

Angela Bonarrigo, EPA Community Relations
One Congress Street, Suite 1100 (HIO)
Boston, MA 02114
(617) 918-1034
bonarrigo.angela@epa.gov

Information Repositories

This publication summarizes a number of reports and studies. All of the technical reports and studies prepared to date for the site are available at the following locations:

Woburn Public Library
45 Pleasant Street
Woburn, MA 01801
(781) 933-0148

Winchester Public Library
80 Washington St.
Winchester, MA
(781) 721-7171

EPA Records Center
1 Congress Street
Boston, MA 02114
Please call to schedule an appointment
(617) 918-1440

Information is available for review on the world wide web:

www.epa.gov/ne/superfund/sites/industriplex

Additional information regarding the Wells G&H Superfund Site Operable Unit 3 Aberjona River Study may be found at:

www.epa.gov/ne/superfund/sites/wellsgh

All documents may be downloaded and printed. Adobe Acrobat Reader is required.

Send us Your Comments

You may use the form below to provide EPA with your written comments about the proposed plan for the Industri-plex Superfund Site Operable Unit 2 (including Wells G&H Operable Unit 3). Please mail this form and any additional written comments, postmarked no later than August 1, 2005 to:

Joseph F. LeMay

U.S. EPA

1 Congress St., Suite 1100 (HBO)

Boston MA 02114

fax: 617-918-1291

e-mail: lemay.joseph@epa.gov

Comments Submitted by: _____ (attach additional sheets as needed)

public comment sheet (continued)

Fold, staple, stamp, and mail

place stamp here

Mr. Joseph F. LeMay
US EPA
1 Congress Street, Suite 1100 (HBO)
Boston , MA 02114-2023